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A single medical study

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OBJECTIVE: *The aim of this study was to evaluate the safety and efficacy of endoscopic submucosal dissection (ESD) of colonic polyps larger than 20 mm.*
MATERIAL AND METHODS: *Between March 2017 and July 2019, a gastro-entero endoscopist team resected 24 large colorectal polyps measuring 20–35 mm in diameter using the ESD technique. After the injection of a mixture of hydroxypropyl methylcellulose with dilute epinephrine and methylene blue into the submucosal layer, a circumferential incision was performed using an electrosurgical knife.*
RESULTS: *A total of 24 colorectal polyps (≥20 mm) from 20 patients were evaluated. The mean age of the patients was 60 years; 16 patients were men and 4 patients were women. The mean polyp size removed by colorectal ESD was 35.3 mm (range 20.0–70.1 mm), and all 24 polyps were larger than 2 cm (100%). There were no cases of delayed bleeding after the colorectal ESD nor were there any post-surgery complications.*
CONCLUSION: *This study demonstrates the efficacy and safety of carrying out ESD of large polyps. This is important because there is not a large body of literature on this subject in this specific population.*

KEY WORDS: Colonic polyps, Endoscopic submucosal dissection, Gastrointestinal endoscopy

Introduction

Colorectal cancer (CRC) develops from benign precursor lesions, and malignant transformation takes many years, if it occurs, et al. [1]. This makes CRC very suitable for population-based screening. Detecting early-stage CRC or its benign precursor lesions (colorectal polyps) by faecal occult blood testing (FOBT) with subsequent endoscopic polypectomy for colon lesions effectively reduces the risk of CRC [2,3]. Polyps may also be found as part of primary colonoscopy screening programs, surveillance programs in high-risk patients, or, incidentally, during a colonoscopy performed for other indications.
Endoscopic mucosal resection (EMR) is currently used routinely for the treatment of sporadic colorectal dysplasia and polyps, both small and large (<20mm) [4]. EMR uses the submucosal injection of fluid to separate the superficial mucosal layer (containing the dysplastic lesion) from the underlying muscle layer, after which the lesion can be removed with an electrosurgical snare [5]. As a procedure, EMR is considered comparatively safe, simple, adaptable and easier to master for a less-experienced endoscopist compared to endoscopic submucosal dissection (ESD) [6]. ESD was developed in the early 2000s as

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a new resection method based on EMR [7]. ESD is used most often for polyps > 20mm or in conjunction with EMR when EMR is unsuccessful in completely excising the polyp or dysplastic lesion [8]. In comparison to EMR, ESD has a higher likelihood of facilitating a complete resection of the lesion and, hence, can provide en-bloc specimens, which can be used for reliable pathological examination [9].

Regarding the size of the polyp, the polypectomy technique for diminutive and small polyps is highly variable among endoscopists. For the curative treatment of mucosal colonic lesions, the most important issue is the completeness of the resection. This task can be difficult to achieve in large sessile polyps and residual tumour may be left behind, leading to local recurrence [10-12]. ESD offers the possibility of achieving en-bloc resections regardless of lesion size. However, there are very few studies on how to remove large colon polyps by endoscope, especially colon polyps larger than 10mm. The aim of this study was to evaluate the safety and efficacy of using ESD for colonic polyps larger than 20 mm.

Material and Methods

A retrospective analysis was made of the data of all patients undergoing endoscopic treatment for large colorectal polyps, greater than 20 mm in size, at the Chinese PLA 305 hospital between March 2017 and July 2019. Written informed consent to participate was obtained from all patients who underwent a colonoscopy examination or any form of treatment for polyps. ESD was only performed on patients with large colonic polyps, and all of these patients were considered for the study. This study was approved by the ethics committee of our institution.

All ESD cases were performed by specially trained endoscopists with large-volume experience in advanced resection techniques. All procedures were performed by the same colonoscopist, Xiaopeng Wang, who had performed 2,000 colonoscopies and therapeutic procedures. ESD was performed in the standard fashion with marking of the lesion border by thermal coagulation dots, followed by intermittent submucosal fluid injection, using a mixture of hydroxypropyl methylcellulose with dilute epinephrine and methylene blue (Fig. 1). A circumferential incision was made using an electrosurgical knife (Dual and/or Hook knives, Olympus Corp., Japan) followed by submucosal dissection (Fig. 1). When severe fibrosis precluded dissection, an attempt was made to snare resect the partially dissected lesion en-bloc or in a piecemeal fashion, with the use of hot biopsy forceps avulsion for residual non-lifting polyp tissue.

The variables collected were gender, median polyp size, polyp location, date of procedure, use of chromoendoscopy, number of polyps resected > 20mm, location of these polyps, size of polyp in mm, and the scarring associated with lesion, as mentioned in the endoscopy report.

A follow-up colonoscopy consisted mainly of a total colonoscopy focused primarily on the endoscopic treatment site and the scar site as detected by chromoendoscopy with magnification. In the absence of a recurrent or residual polyp, a second colonoscopic surveillance was performed 12 months after the first one. On detection of a recurrent or residual polyp, a second surveillance was performed six months after the first one, with additional endoscopic treatment.

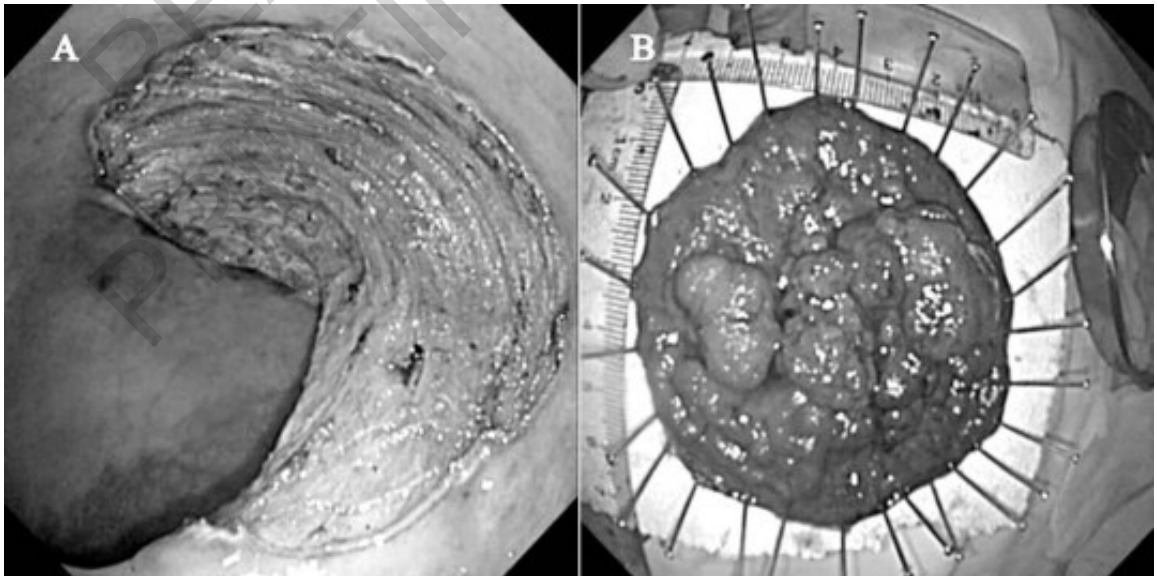

Fig. 1: A) Post-endoscopic submucosal dissection (ESD) defect, B) A large > 7 cm colorectal polyps resected by endoscopic submucosal dissection (ESD).

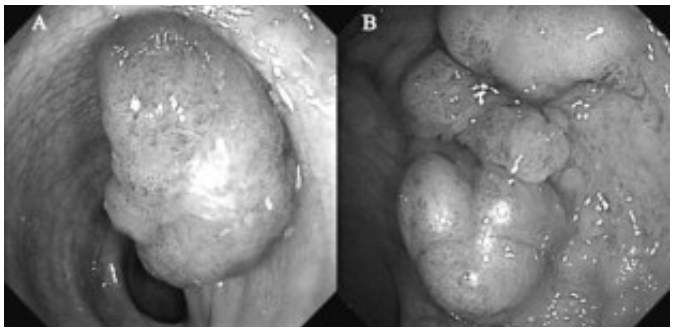

Fig. 2: a) Colorectal polyps seen in the ascending colon, >20mm in diameter, b) Colorectal polyps seen in the sigmoid colon, >20mm in diameter.

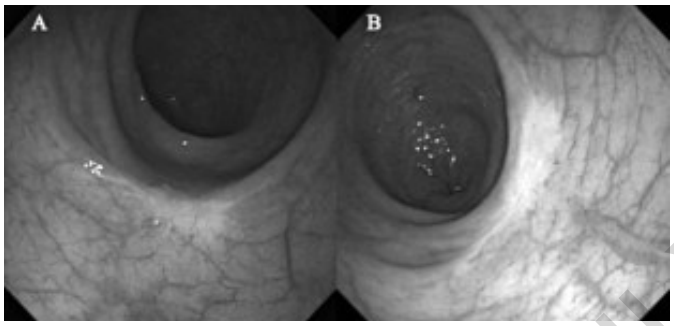

Fig. 3 (a, b) A follow-up colonoscopy consisting mainly of a total colonoscopy focused primarily on the endoscopic treatment site and the scar site.

A descriptive analysis was used to summarise the study findings. The median (range) or mean (standard deviation) was recorded for quantitative variables and frequency (%) for discrete variables. All statistical analyses were conducted using statistical software (SPSS 17.0 for Windows; SPSS Inc., Chicago, IL). $P < 0.05$ was considered statistically significant.

Results

Between March 2017 and July 2019, 24 colorectal polyps (≥ 20 mm) in 20 patients were removed by ESD. The demographic features of the patients and the characteristics of the polyps are summarized in Table I. The median age when the polyps were diagnosed was 58.2 years (range, 45.2–85.3 years). There were twelve (60%) male patients and eight (40%) female patients. There was one patient with three colorectal polyps (≥20 mm), and one patient with two colorectal polyps (≥20 mm). All ESD and hybrid ESD/EMR procedures were performed by a single therapeutic endoscopist, Xiaopeng Wang. A complete en-bloc resection (defined at endoscopy) was performed on sixteen of the polyps (66.7%), while a partial resection was done on eight of them (33.3 %). The median polyp size removed by colorectal ESD was 35.3 mm (range, 20.0-70.1 mm)) and

Table I - *Demographic features of patients and characteristics of the polyps.*

Characteristics	Patients N=20, Polyps N=24
Median age, years (range)	58.2 (45.2 – 85.3)
Gender, n (%)	
Male	12 (60.0%)
Female	8 (40.0%)
Resectioning technique, n (%)	
En bloc	16 (66.7%)
Piecemeal	8 (33.3%)
Polyp size (mm)	35.3 (20.0 – 70.1)
Size of cutting section (mm)	34.3 (20.6- 70.3)
Polyps ≥ 20 mm	24 (100%)
Location, n (%)	
Ascending colon	8 (33.3%)
Transverse colon	6 (25.0%)
Descending colon	4 (16.7%)
Sigmoid colon	4 (16.7%)
Rectum	2 (8.3%)
Histology, n (%)	
Tubular adenoma	12 (50%)
Hyperplastic polyp	6 (25%)
Lymphoid polyp	4 (16.7%)
Inflammatory polyp	2 (8.3%)

the size of the cutting section after colorectal ESD was 34.3 mm (range 20.6-70.3 mm). Of the 24 polyps, all (100 %) were 20mm or greater in diameter. The location of the polyps was as follows: eight (33.3%) polyps were in the ascending colon, six (25.0%) polyps were in the transverse colon, four (16.7%) polyps were in the descending colon, four (16.7%) polyps were in the sigmoid colon and two (8.3%) polyps were in the rectum colon. (Fig. 2). With respect to their histology, twelve (50%) were tubular adenoma, six (25%) were hyperplastic polyps, four (16.7%) were lymphoid polyps, and two (8.3%) were inflammatory polyps.

A review of all the resected polyps revealed no cases of incomplete resection. A follow-up colonoscopy consisted mainly of a total colonoscopy focused primarily on the endoscopic treatment site and the scar site, as detected by chromoendoscopy with magnification (Fig. 3).

Discussion

In recent years, with the advent of better imaging and newer resectioning techniques, the sphere of endoscopic resection is slowly closing the gap with surgery. Guidelines published by the American Society for Gastrointestinal Endoscopy in the last few years, based on the SCENIC consensus statement, recommend endoscopic resection of large polyps, followed by endoscopic surveillance [13]. Here we assessed the clinical outcome of ESD in patients with relatively large polyps. The advantages of using this procedure over conventional EMR for large sessile polyps has already been reported

by Moss et al. [14]. In that study, the rate of en-bloc resection, which was 70%, reflected the convenience of its use for imaginary lesions of the porcine colon sized 40*40 mm. In our study, the en-bloc resection rate was 66.7%, and the objective lesions were relatively larger than those of the study by Moss et al [14]. For non-polypoid endoscopically visible dysplasia, resection is still suggested, too. However, the data on the success and recurrence rates after endoscopic resection of polyps larger than 1 cm remain limited [15–19]. In our cohort of patients, we focused on the use of ESD for large polyps in patients. Overall, our study concluded that ESD is an effective and safe therapy for polyps > 20mm.

Polyp resection in patients with diameter > 20mm is challenging because of the submucosal fibrosis that is often present, especially in the ascending colon. Obtaining adequate submucosal lifting is also a challenge. However, the use of stiffer snares and the avulsion technique, following some submucosal injection, have aided resection. The identification of lesion margins can also be difficult due to surrounding inflammation. In these cases, the use of narrow-band imaging or contrast chromoscopy can be helpful to delineate the lesion. In this study, all the patients were successfully injected with a mixture of hydroxypropyl methylcellulose with dilute epinephrine and methylene blue in the submucosal layer. This is conducive to obtaining adequate submucosal lifting and the identification of polyp margins. Another important study by Smith et al [16]. described the success of ESD in the resection of 67 large polyps, with a median size ranging from 12 to 30mm. En-bloc resection was achieved in 78% of the cases, without any invasive adenocarcinomas. With a median follow-up of 1.5 years, only one recurrence of the disease was seen, and this was endoscopically resected again. Although EMR is a much more widely used endoscopic technique compared to ESD, large polyps are removed more thoroughly by ESD, and therefore our study has considerable implications for practicing gastroenterologists Our study included all polyps >20mm, both polypoid and flat. What is more, 70 % of the polyps were non-polypoid and, therefore, clinically very relevant. A previous study found that when the polyps were ≥20mm, recurrences were significantly more common compared to smaller polyps, and they were also endoscopically treatable. In our study, although all the polyps were ≥20mm, only one patient suffered a recurrence. This also shows that ESD is better for large polyps. Currently, data on the efficacy of the endoscopic resection of large polyps are scarce. This study shows that even polyps larger than 2 cm in size can be safely and effectively resected using ESD.

Our study did have some limitations since it was a retrospective review of data at a single medical centre. However, our practice is such that almost all our patients have their follow-up and surveillance procedures done at our institution, making the follow-up data more meaningful. The procedures were performed by one highly skilled colonoscopist, but this is true of the majority of gastroenterology practices.

Conclusion

In conclusion, we have presented here the largest retrospective review examining the efficacy, safety and outcomes of ESDs of polyps greater than 20 mm. We have shown that ESD for patients with large polyps is a feasible and curative process, which may help patients avoid a proctocolectomy. This study is important because there is not a large body of literature on this subject in this specific population. The results of our study serve to affirm and support current guidelines on the endoscopic management of large colonic polyps.

Riassunto

Lo scopo di questo studio era di valutare la sicurezza e l'efficacia della dissezione sottomucosa endoscopica (ESD) di polipi del colon di dimensioni maggiori di 20 mm.

Tra marzo 2017 e luglio 2019, un team di gastro-entero endoscopisti ha resecato 24 grandi polipi colorettali di 20-35 mm di diametro utilizzando la tecnica ESD. Dopo l'iniezione di una miscela di idrossipropilmetilcellulosa con epinefrina diluita e blu di metilene nello strato sottomucoso, è stata eseguita un'incisione circonferenziale utilizzando un elettrobisturi.

L'età media dei pazienti era di 60 anni; 16 pazienti erano uomini e 4 pazienti erano donne. La dimensione media del polipo rimosso dall'ESD colorettale era di 35,3 mm (intervallo 20,0-70,1 mm) e tutti i 24 polipi erano più grandi di 2 cm (100%). Non ci sono stati casi di sanguinamento ritardato dopo ESD colorettale né complicazioni post-chirurgiche.

In cnclusione Questo studio dimostra l'efficacia e la sicurezza dell'esecuzione di ESD di grandi polipi. Questo è importante perché non c'è una grande quantità di letteratura su questo argomento in questa specifica popolazione.

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